

L Number	Hits	Search Text	DB	Time stamp
1	10	measure-h\$.in.	USPAT	2003/10/08 12:22
2	2	measure-h\$.in.	US-PGPUB	2003/10/08 12:22
3	2	measure-r\$.in.	US-PGPUB	2003/10/08 12:29
4	3	cbp112 or cbp adj "112"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:30
5	68	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:30
6	68	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:35
7	68	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:35
8	71	streptococc\$ and (pbca or hic)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:35
-	31	FORMAT ADJ SAVE	USPAT	2002/03/20 14:34
-	5	9709994.did.	DERWENT	2002/12/17 11:10
-	0	6500613.did.	DERWENT	2002/12/17 11:10
-	0	6500613.pn.	DERWENT	2002/12/17 11:11
-	0	6500613.pn.	USPAT	2002/12/17 11:24
-	10	measure-h\$.in.	USPAT	2003/10/08 12:16
-	0	measure-h\$.in.	US-PGPUB	2003/10/08 12:16
-	1	measure-r\$.in.	US-PGPUB	2003/10/08 12:16
-	1	cbp112 or cbp adj "112"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:16
-	579	cpbA or cpb adj "a"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:29
-	73	spsa or sps adj "a"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:30
-	106	pspc or psp adj c	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:31
-	48	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:17
-	51	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:17
-	53	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:18
-	43	streptococc\$ and (pbca or hic)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/08 12:18

EAST - [09829382.wsp:1]

File View Edit Tools Window Help

Search List Browse Queue Clear

DBs USPAT Plurals

Default operator: OR Highlight all hit terms initially

Drafts

- BRS:
- BRS: 1 and 2

Pending

Active

- L1: (5) 9709994.did.
- L2: (0) 6500613.did.
- L3: (0) 6500613.pn.
- L4: (0) 6500613.pn.
- L5: (10) masure-h\$.in.
- L6: (0) masure-h\$.in.
- L7: (1) masure-r\$.in.
- L8: (1) cbp112 or cbp adj "112"
- L9: (579) cpbA or cpb adj "a"
- L10: (73) spsa or sps adj "a"
- L11: (106) pspc or psp adj c
- L12: (48) streptococc\$ and (8 or 9 or 10 or 11)

Failed

Saved

Favorites

Tagged (15)

UDC

Queue

Trash

BRS ... IS6 ... Image Text HTML

	Type	L #	Hits	Search Text	DBs	Time Stamp	Co
1	BRS	L1	5	9709994.did.	DERWENT	2002/12/17 11:10	
2	BRS	L2	0	6500613.did.	DERWENT	2002/12/17 11:10	
3	BRS	L3	0	6500613.pn.	DERWENT	2002/12/17 11:11	
4	BRS	L4	0	6500613.pn.	USPAT	2002/12/17 11:24	
5	BRS	L5	10	masure-h\$.in.	USPAT	2002/12/17 11:26	
6	BRS	L6	0	masure-h\$.in.	US-PGPUB	2002/12/17 11:26	
7	BRS	L7	1	masure-r\$.in.	US-PGPUB	2002/12/17 11:27	
8	BRS	L8	1	cbp112 or cbp adj "112"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:27	
9	BRS	L9	579	cpbA or cpb adj "a"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:29	
10	BRS	L10	73	spsa or sps adj "a"	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:30	
11	BRS	L11	106	pspc or psp adj c	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:31	
12	BRS	L12	48	streptococc\$ and (8 or 9 or 10 or 11)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/17 11:31	

EAST - [09829382.wsp:1]

File View Edit Tools Window Help

Search List Browse Queue Clear

DBs USPAT

Default operator: OR

☐ Plurals

☒ Highlight all hit terms initially

**Drafts**

- BRS:
- BRS: 1 and 2

**Pending**

**Active**

- L1: (51) streptococc\$ and ((cbp112 or cbp adj "1

**Failed**

**Saved**

- (31) FORMAT ADJ SAVE
- (5) 9709994.did.
- (0) 6500613.did.
- (0) 6500613.pn.
- (0) 6500613.pn.
- (10) ma\$ure-h\$.in.
- (0) masure-h\$.in.
- (1) masure-r\$.in.
- (1) cbp112 or cbp adj "112"
- (579) cpbA or cpb adj "a"
- (73) spsa or sps adj "a"
- (106) pspc or psp adj c
- (48) streptococc\$ and ((cbp112 or cbp adj "112"

**Favorites**

**Tagged (16)**

**UDC**

**Queue**

**Trash**

BRS ... IS\$ ... Image Text HTML

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	BRS	L1	51	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/01/02 11:28	

EAST - [09829382.wsp:1]

File View Edit Tools Window Help

Search List Browse Queue Clear

DBs: USPAT

Default operator: OR

☐ Plurals

☒ Highlight all hit terms initially

**Drafts**

- BRS:
- BRS: 1 and 2

**Pending**

**Active**

- L11: (53) streptococc\$ and ((cbp112 or cbp adj

**Failed**

**Saved**

- (31) FORMAT ADJ SAVE
- (5) 9709994.did.
- (0) 6500613.did.
- (0) 6500613.pn.
- (0) 6500613.pn.
- (10) masure-h\$.in.
- (0) masure-h\$.in.
- (1) masure-r\$.in.
- (1) cbp112 or cbp adj "112"
- (579) cpbA or cpb adj "a"
- (73) spsa or sps adj "a"
- (106) pspc or psp adj c
- (48) streptococc\$ and ((cbp112 or cbp adj "112"
- (51) streptococc\$ and ((cbp112 or cbp adj "112"

**Favorites**

- Tagged (16)
- UDC
- Queue
- Trash

BRS ... IS... Image Text HTML

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	BRS	L11	53	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/02/04 14:33	

EAST - [09829382.wsp:1]

File View Edit Tools Window Help

Search Edit Browse Queue Clear

DBs USPAT

Default operator: OR

☐ Plurals

☒ Highlight all hit terms initially

**Drafts**

- BRS:
- BRS: 1 and 2

**Pending**

**Active**

- L11: (53) streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))
- L16: (43) streptococc\$ and (pbca or hic)

**Failed**

**Saved**

- (31) FORMAT ADJ SAVE
- (5) 9709994.did.
- (0) 6500613.did.
- (0) 6500613.pn.
- (0) 6500613.pn.
- (10) masure-h\$.in.
- (0) masure-h\$.in.
- (1) masure-r\$.in.
- (1) cbp112 or cbp adj "112"
- (579) cpbA or cpb adj "a"
- (73) spsa or sps adj "a"
- (106) pspc or psp adj c
- (48) streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))
- (51) streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))

**Favorites**

- Tagged (18)
- UDC
- Queue
- Trash

BRS ... ISA ... Image Text HTML

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	BRS	L11	53	streptococc\$ and ((cbp112 or cbp adj "112") or (cpbA or cpb adj "a") or (spsa or sps adj "a") or (pspc or psp adj c))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/02/04 14:46	
2	BRS	L16	43	streptococc\$ and (pbca or hic)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/02/04 14:46	

## RESULT 1

ID O33741 PRELIMINARY; PRT; 539 AA.  
 AC O33741;  
 DT 01-JAN-1998 (TREMBLREL. 05, CREATED)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST SEQUENCE UPDATE)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST ANNOTATION UPDATE)  
 DE SPSA PROTEIN.  
 OS STREPTOCOCCUS PNEUMONIAE.  
 OC PROKARYOTA; FIRMICUTES; COCCI; STREPTOCOCCAEAE.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC STRAIN=TYPE 2;  
 RA HAMMERSCHMIDT S., TALAY S.R., BRANDTZAEG P., CHHATWAL G.S.;  
 RL MOL. MICROBIOL. 25:1113-1124(1997).  
 DR EMBL; AJ002054; E354783; -.  
 SQ SEQUENCE 539 AA; 61298 MW; 1171E068 CRC32;

QR74.M65  
Adonis

Query Match 100.0%; Score 172; DB 9; Length 539;  
 Best Local Similarity 100.0%; Pred. No. 9.64e-25;  
 Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 39 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 67  
 ||||||||||||||||||||||||||||  
 QY 2 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 30

## RESULT 2

ID O33742 PRELIMINARY; PRT; 581 AA.  
 AC O33742;  
 DT 01-JAN-1998 (TREMBLREL. 05, CREATED)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST SEQUENCE UPDATE)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST ANNOTATION UPDATE)  
 DE SPSA PROTEIN.  
 OS STREPTOCOCCUS PNEUMONIAE.  
 OC PROKARYOTA; FIRMICUTES; COCCI; STREPTOCOCCAEAE.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC STRAIN=TYPE 47;  
 RA HAMMERSCHMIDT S., TALAY S.R., BRANDTZAEG P., CHHATWAL G.S.;  
 RL MOL. MICROBIOL. 25:1113-1124(1997).  
 DR EMBL; AJ002055; E354769; -.  
 SQ SEQUENCE 581 AA; 65671 MW; BDC6F10E CRC32;

Sgt. 1997  
Not prior

Query Match 100.0%; Score 172; DB 9; Length 581;  
 Best Local Similarity 100.0%; Pred. No. 9.64e-25;  
 Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 39 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 67  
 ||||||||||||||||||||||||||||  
 QY 2 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 30

4/7/11

DIALOG(R) File 155:MEDLINE(R)

09610290 98010350 PMID: 9350867

SpsA, a novel pneumococcal surface protein with specific binding to secretory immunoglobulin A and secretory component.

Hammerschmidt S; Talay S R; Brandtzaeg P; Chhatwal G S

Department of Microbial Pathogenesis, GBF-National Research Centre for Biotechnology, Braunschweig, Germany.

Molecular microbiology (ENGLAND) Sep 1997, 25 (6) p1113-24, ISSN 0950-382X Journal Code: 8712028

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

The interaction of pathogenic bacteria with host serum and matrix proteins is a common strategy to enhance their virulence. *Streptococcus pneumoniae* colonizes the human upper respiratory tract in healthy individuals and is also able to cause invasive diseases. Here, we describe a novel pneumococcal surface protein, SpsA, capable of binding specifically to human secretory immunoglobulin A (SIgA). The dissociation constant of SIgA binding to SpsA was  $9.3 \times 10^{-9}$  M. Free secretory component (SC) also binds to *S. pneumoniae*, whereas serum IgA does not, suggesting that pneumococcal binding to SIgA is mediated by the SC. To our knowledge, this is the first defined interaction of SC with a prokaryotic protein. The *spsA* gene encodes a polypeptide of 523 amino acids with a predicted molecular mass of 59 151 Da. The SIgA- or SC-binding domain is located in the N-terminal part of SpsA and exhibits no significant homology to any other proteins. The purified SIgA-binding domain of SpsA could completely inhibit the binding of SIgA to pneumococci. SpsA was expressed by 73% of the tested *S. pneumoniae* isolates and was substantially conserved between different serotypes. The interaction between *S. pneumoniae* and SC via SpsA represents a novel biological interaction that might increase virulence by the impairment of bacterial clearance.

## RESULT 3

ID O30874 PRELIMINARY; PRT; 663 AA.  
 AC O30874;  
 DT 01-JAN-1998 (TREMBLREL. 05, CREATED)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST SEQUENCE UPDATE)  
 DT 01-JAN-1998 (TREMBLREL. 05, LAST ANNOTATION UPDATE)  
 DE CHOLINE BINDING PROTEIN A (FRAGMENT).  
 GN CBPA.  
 OS STREPTOCOCCUS PNEUMONIAE.  
 OC PROKARYOTA; FIRMICUTES; COCCI; STREPTOCOCCAEAE.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC STRAIN=R6X;  
 RA ROSENOW C., RYAN P., WEISER J.N., JOHNSON S., FONTAN P., ORTQVIST A.,  
 RA MASURE H.R.;  
 RL MOL. MICROBIOL. 0:0-0(1997).  
 DR EMBL; AF019904; G2425109; -.  
 FT NON\_TER 1 1  
 SQ SEQUENCE 663 AA; 75064 MW; F3880B73 CRC32;

Query Match 100.0%; Score 172; DB 9; Length 663;  
 Best Local Similarity 100.0%; Pred. No. 9.64e-25;  
 Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 1 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 29  
 |||||  
 QY 2 ENEGSTQAATSSNMAKTEHRKAAKQVVDE 30

Also <sup>wo</sup> 9709994

Also 6,500,613 (Issuing 12/31/02)



13151920 21888621 PMID: 11891047

Allelic variation in the highly polymorphic locus *pspC* of *Streptococcus pneumoniae*.

Iannelli Francesco; Oggioni Marco R; Pozzi Gianni

Laboratory of Molecular Microbiology and Biotechnology, Sezione di Microbiologia, Dipartimento di Biologia Molecolare, Universita di Siena, 53100, Siena, Italy.

Gene (Netherlands) Feb 6 2002, 284 (1-2) p63-71, ISSN 0378-1119

Journal Code: 7706761

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

*PspC*, also called *SpsA*, *CbpA*, *PbcA*, and *Hic*, is a surface protein of *Streptococcus pneumoniae* studied for its antigenic properties, its capability to bind secretory IgA, C3 and complement factor H, and its activity as an adhesin. In this work we characterized the *pspC* locus of 43 pneumococcal strains by DNA sequencing of PCR fragments. Using PCR primers designed on two unrelated open reading frames, flanking the *pspC* locus, it was possible to amplify the *pspC* locus of each of the 43 strains of *S. pneumoniae*. In 37 out of 43 strains there was a single copy of the *pspC* gene, while two tandem copies of *pspC* were found in the other six strains. The sequence of the *pspC* locus was different in each of the 43 strains. Insertion sequences were found in the *pspC* locus of 11 out of 43 strains. Analysis of the deduced amino acid sequence of the *PspC* variants showed a common organization of the molecules: (i) a 37 amino acid leader peptide which is conserved in all proteins, (ii) an N-terminal portion which is essentially alpha-helical, and is the result of assembly of eight major sequence blocks, (iii) a proline-rich region, and (iv) a C-terminal anchor responsible for the cell surface attachment. By sequence comparison we identified 11 major groups of *PspC* proteins. Proteins within one group displayed only minor variations of the amino acid sequence. An unexpected finding was that *PspC* variants could differ in the anchor sequence. While 32 of the *PspC* proteins displayed the typical choline binding domain of pneumococcal surface proteins, 17 other *PspCs* showed the LPXTG motif, which is typical of surface proteins of other gram-positive bacteria. This major difference in the anchor region was also observed in the adjacent proline-rich regions which differed considerably in size and composition.

Record Date Created: 20020313